

Amendments to the Specification

The paragraphs starting at page 4, line 26 and ending at page 7, line 9 have been amended as follows.

The guiding shaft supports the carriage at multiple points (generally, two points), with the interposition of bearings, one for one, whereas the guiding ~~rails~~ rail supports the carriage at one point, with the interposition of a bearing. The carriage is moved in the space between the guiding shaft and guiding rail, while sliding on the guiding shaft and guiding rail. Thus, the timing belt for moving the carriage is positioned in the adjacencies of the guiding shaft, which is greater in the friction against the carriage.

The force applied to the carriage through the timing belt in order to move the carriage also acts in the direction to rotate the carriage about the center of gravity of the combination of the carriage and recording head, and so does the friction between the guiding rail and carriage. In other words, the force applied through the timing belt to the carriage and the friction between the guiding rail and carriage ~~acts~~ act in the same direction, ~~inducing~~ thereby inducing rotational moment in the carriage. Thus, in the case of the structural arrangement in which the guiding shaft and guiding rail are disposed ~~in~~ parallel to each other, in the manner to overlap roughly in the vertical direction, with the guiding shaft being positioned on the opposite side of the center of gravity of the combination of the carriage and recording head, from the guiding rail, this rotational moment acts in the direction to rotate the carriage in parallel to the plane perpendicular to

the recording paper as well as the direction in which the carriage is reciprocally moved, whereas in the case of the structural arrangement in which the guiding shaft and guiding rail are disposed in parallel to each other, at the same level, with the guiding shaft being positioned on the opposite side of the center of gravity of the combination of the carriage and recording head, from the guiding rail, this rotational moment acts in the direction to rotate the carriage in parallel to the plane parallel to the recording paper. In other words, the attitude of the carriage is prone to be changed by the force applied to the carriage through the timing belt to reciprocally move the carriage, and the ~~changes~~ change in the carriage attitude reduces the level of accuracy at which an image is recorded. The amount by which the recording accuracy is reduced is much greater in the case of the latter arrangement. Thus, in the case of a recording apparatus for forming a highly precise image, generally, the guiding shaft and guiding rail are disposed in parallel to each other, roughly at the same level, and the encoder and encoder scale are positioned in the adjacencies of the guiding shaft, or the location at which driving force is transmitted to the timing belt.

However, positioning the guiding shaft and guiding rail in parallel to each other, with one being virtually straight above the other, and as far apart as possible from each other, and placing in the adjacencies thereof the portion for transmitting driving force to the timing belt, the encoder, and the encoder scale, increase the measurement of the carriage in terms of vertical direction, resulting in the increase in the overall height of a recording apparatus, which is a problem.

The paragraph starting at page 13, line 26 and ending at page 14, line 2 has been amended as follows.

The head setting lever 403 is ~~rotatable~~ rotatably supported by the carriage 401, so that its rotational axis virtually coincides with the ~~axil-line~~ axis of the guiding shaft 402.

The paragraphs starting at page 15, line 17 and ending at page 16, line 8 have been amended as follows.

The carriage 401 is moved along the guiding shaft 402, and its ~~positioned~~ position is calculated (determined) with reference to one of the lengthwise end walls of the chassis 701, that is, the chassis walls located at the ends, one for one, of the moving range of the carriage 401, more precisely, the point at which the carriage 40 makes contact with the ~~above-described-the~~ above-described wall of the chassis 701. The position of the carriage 401 is continuously detected; as the carriage 401 is moved, the ~~patterns~~ pattern on the encoder scale 408 is counted by the encoder sensor 407.

The apparatus main assembly is also provided with a carriage belt 412, as a means for reciprocally moving the carriage, to which the carriage belt 412 is attached. The carriage belt 412 is stretched between ~~the~~ an idler pulley (unshown) and a CR motor pulley (unshown), roughly ~~in~~ parallel to the guiding shaft 402, in the adjacencies of the aforementioned end walls of the chassis 701, one for one.

The paragraph starting at page 17, line 22 and ending at page 18, line 22 has been amended as follows.

As driving force is transmitted to the carriage 401 through the carriage belt 412, in the recording apparatus structured as described above, this driving force acts in the direction to rotate the carriage 401 ~~in~~ parallel to the plane parallel to recording sheet P, because the center of gravity of the combination of the recording head cartridge and carriage 401 is between the guiding shaft 402 and guiding rail 305; in other words, the driving force acts in the direction to change the attitude of the carriage 401. Moreover, the friction between guiding rail 305 and carriage 401 also acts in the direction to rotate the carriage 401. As a result, the rotational moment is induced in the carriage 401, which is likely to change the carriage 401 in attitude. The changes in the attitude of the carriage 401 caused by the driving force, as described, change the position of the recording head 500 relative to the encoder sensor 407. Since the recording head 500 is driven by the recording head driving signals generated in coordination with the detection signals from the encoder

sensor 407, the changes in the position of the recording head 500 relative to the encoder sensor 407 result in the changes in the position of the spot on the recording paper P on which each ink droplet lands, which in turn frequently lowers the level of preciseness at which an image is recorded; an image nonuniform in appearance is formed.

The paragraph starting at page 19, line 26 and ending at page 20, line 18 has been amended as follows.

The encoder scale 408 is kept straight by being hooked to a claw of the chassis 701 by one end, and an encoder scale spring (unshown) by the other end. The encoder scale spring is provided with a bend preventing portion (unshown), in addition to a claw to which the encoder scale 408 is hooked. The bend preventing portion comes into contact with the chassis 701 as the encoder scale spring is ~~flex~~ flexed. More specifically, as the recording apparatus is subjected to the impacts resulting from ~~the fall~~ falling of the recording apparatus, or the encoder scale 408 is accidentally pulled by a user when the user is required to touch the internal components of the recording apparatus, for example, when the user must replace the ink container(s), or deal with a jam (remove recording paper jammed in the apparatus), this bend preventing portion comes into contact with the chassis 701, preventing thereby the encoder scale 408 from becoming unhooked, and/or the encoder scale spring from deforming.

The paragraph starting at page 24, line 20 and ending at page 25, line 6 has been amended as follows.

In other words, according to the present invention, the encoder scale attached to the carriage remains covered when the carriage is at the ink container replacement location, or the recording head cartridge replacement location. Therefore, even if the encoder scale is positioned on the front side of the recording apparatus, where the encoder scale is prone to be touched by the hand of a user, it is not likely to be accidentally touched by the ~~user's~~ user's hand. Thus, the present invention makes it possible to provide a highly reliable recording apparatus, that is, an ink jet recording apparatus which does not suffer from the problem that it is damaged by the accidental operations performed by a user.

The paragraph starting at page 29, line 8 and ending at line 24 has been amended as follows.

According to another characteristic aspect of the present invention, the guiding shaft as a guiding member is disposed roughly at the same level as the guiding rail. Therefore, even if the amount of torque to which the head holding member is subjected increases during the reciprocal driving of the head holding member, the head holding member is kept stable in attitude. Not only do the ~~above-described~~ above-described

placement of the head holding member position detecting means and placement of the guiding member synergistically raise the level of accuracy at which ~~recoding~~ recording is made, but also, make it possible to drastically reduce the height of the carriage moving portion, making it therefore possible to provide a recording apparatus drastically smaller in overall height compared to a recording apparatus in accordance with the prior art.